

WHAT IS CLAIMED IS:

1. A recording apparatus, comprising:

means for recording desired files on a recording medium;

means for updating an index file recorded on the recording medium in response to recording of any of the files;

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid; and

means for setting the valid/invalid flag of a predetermined one of the slots which is in a state set to valid with the valid/invalid flag to invalid to set the slot as a free slot while settings of the higher hierarchy, lower hierarchy and same hierarchy reference information of the slot are maintained.

2. A recording apparatus according to claim 1, further comprising:

means for detecting the free slot in which the higher hierarchy, lower hierarchy and same hierarchy reference information are set so as to be compatible with a destination of registration; and

means for setting the valid/invalid flag in the free slot to valid while the settings of the higher hierarchy, lower hierarchy and same hierarchy reference information are maintained and allocating corresponding extract information to the free slot to register the extract information into the index file.

3. A recording apparatus according to claim 1, wherein the higher hierarchical reference information is a parent entry number pointing to the slot corresponding to the closest folder to which a corresponding file or folder belongs while the lower hierarchy reference information is a child entry number which points, where the slot retains the extract information corresponding to a folder, to the slot corresponding to the closest folder or file which belongs to the folder, but indicates, where the slot retains the extract information corresponding to a file, a predetermined value, and the same hierarchy reference information is a sibling entry number

successively and circulatively pointing to another one of those slots which correspond to files and folders of the same hierarchy which belong to the corresponding folder or the folder same as that of the file.

4. A recording apparatus, comprising:

means for recording desired files on a recording medium;

means for updating an index file recorded on the recording medium in response to recording of any of the files;

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

means for setting the higher hierarchy, lower hierarchy and same hierarchy reference information so as to be inconsistent with regard to a predetermined one of

the slots;

means for setting the valid/invalid flag of the predetermined slot to valid and allocating the extract information to the predetermined slot; and

means for registering the extract information into the index file.

5. A recording apparatus according to claim 4, wherein settings of the higher hierarchy, lower hierarchy and same hierarchy reference information are such that the higher hierarchy reference information and the lower hierarchy reference information point to the same slot.

6. A recording apparatus according to claim 4, wherein settings of the higher hierarchy, lower hierarchy and same hierarchy reference information are such that the same hierarchy reference information points to a slot which does not exist in the same hierarchy.

7. A recording apparatus according to claim 4, further comprising:

means for detecting those of the slots in which the higher hierarchy, lower hierarchy and same hierarchy reference information which exhibit inconsistency are set; and

means for collectively displaying files corresponding the detected slots.

8. A recording apparatus according to claim 4,  
further comprising:

means for detecting those of the slots in which the  
higher hierarchy, lower hierarchy and same hierarchy  
reference information which exhibit inconsistency are  
set; and

means for updating the reference information of the  
detected slots and those of the slots associated with the  
detected slots so that the detected slots may belong to a  
predetermined folder.

9. A recording apparatus, comprising:

means for recording desired files on a recording  
medium;

means for updating an index file recorded on the  
recording medium in response to recording of any of the  
files;

the index file being formed from a train of slots  
of extract information of the files and a folder or  
folders;

each of the slots having set therein higher  
hierarchy reference information pointing to another slot  
of a higher hierarchy, lower hierarchy reference  
information pointing to a further slot of a lower  
hierarchy, same hierarchy reference information pointing

to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

the higher hierarchical reference information being a parent entry number pointing to the slot corresponding to the closest folder to which a corresponding file or folder belongs;

the lower hierarchy reference information being a child entry number which points, where the slot retains the extract information corresponding to a folder, to the slot corresponding to the closest folder or file which belongs to the folder, but indicates, where the slot retains the extract information corresponding to a file, a predetermined value;

the same hierarchy reference information being a sibling entry number successively and circulatively pointing to another one of those slots which correspond to files and folders of the same hierarchy which belong to the corresponding folder or the folder same as that of the file;

means for setting the valid/invalid flag of any of the slots to invalid to set the slot as a free slot; and

means for setting the reference information of the free slot and the remaining free slots such that each of

the sibling entry numbers of the free slot and the remaining free slots may successively and circulatively point to another one of the free slot and the remaining free slots.

10. A file management method wherein desired files are recorded on a recording medium and an index file recorded on the recording medium is updated in response to recording of any of the files, comprising:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

a step of setting the valid/invalid flag of a predetermined one of the slots which is in a state set to valid with the valid/invalid flag to invalid to set the slot as a free slot while settings of the higher hierarchy, lower hierarchy and same hierarchy reference

information of the slot are maintained.

11. A file management method according to claim 10, further comprising the steps of:

detecting the free slot in which the higher hierarchy, lower hierarchy and same hierarchy reference information are set so as to be compatible with a destination of registration; and

setting the valid/invalid flag in the free slot to valid while the settings of the reference information are maintained and allocating corresponding extract information to the free slot to register the extract information into the index file.

12. A file management method wherein desired files are recorded on a recording medium and an index file recorded on the recording medium is updated in response to recording of any of the files, comprising the steps of:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower



hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

setting the higher hierarchy, lower hierarchy and same hierarchy reference information so as to be inconsistent with regard to a predetermined one of the slots;

setting the valid/invalid flag of the predetermined slot to valid and allocating the extract information to the predetermined slot; and

registering the extract information into the index file.

13. A file management method according to claim 12, further comprising the steps of:

detecting those of the slots in which the higher hierarchy, lower hierarchy and same hierarchy reference information which exhibit inconsistency are set; and

updating the reference information of the detected slots and those of the slots associated with the detected slots so that the detected slots may belong to a predetermined folder.

14. A file management method wherein desired files are recorded on a recording medium and an index file

recorded on the recording medium is updated in response to recording of any of the files, comprising the steps of:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

the higher hierarchical reference information being a parent entry number pointing to the slot corresponding to the closest folder to which a corresponding file or folder belongs;

the lower hierarchy reference information being a child entry number which points, where the slot retains the extract information corresponding to a folder, to the slot corresponding to the closest folder or file which belongs to the folder, but indicates, where the slot retains the extract information corresponding to a file,

a predetermined value;

the same hierarchy reference information being a sibling entry number successively and circulatively pointing to another one of those slots which correspond to files and folders of the same hierarchy which belong to the corresponding folder or the folder same as that of the file;

setting the valid/invalid flag of any of the slots to invalid to set the slot as a free slot; and

setting the reference information of the free slot and the remaining free slots such that each of the sibling entry numbers of the free slot and the remaining free slots may successively and circulatively point to another one of the free slot and the remaining free slots.

15. A program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files, the processing procedure comprising:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher

hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

a step of setting the valid/invalid flag of a predetermined one of the slots which is in a state set to valid with the valid/invalid flag to invalid to set the slot as a free slot while settings of the higher hierarchy, lower hierarchy and same hierarchy reference information of the slot are maintained.

16. A program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files, the processing procedure comprising the steps of:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot

of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

setting the higher hierarchy, lower hierarchy and same hierarchy reference information so as to be inconsistent with regard to a predetermined one of the slots;

setting the valid/invalid flag of the predetermined slot to valid and allocating the extract information to the predetermined slot; and

registering the extract information into the index file.

17. A program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files, the processing procedure comprising the steps of:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

the higher hierarchical reference information being a parent entry number pointing to the slot corresponding to the closest folder to which a corresponding file or folder belongs;

the lower hierarchy reference information being a child entry number which points, where the slot retains the extract information corresponding to a folder, to the slot corresponding to the closest folder or file which belongs to the folder, but indicates, where the slot retains the extract information corresponding to a file, a predetermined value;

the same hierarchy reference information being a sibling entry number successively and circulatively pointing to another one of those slots which correspond to files and folders of the same hierarchy which belong to the corresponding folder or the folder same as that of

the file;

setting the valid/invalid flag of any of the slots to invalid to set the slot as a free slot; and

setting the reference information of the free slot and the remaining free slots such that each of the sibling entry numbers of the free slot and the remaining free slots may successively and circulatively point to another one of the free slot and the remaining free slots.

18. A recording medium on which a program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files is recorded, the processing procedure comprising:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a

valid/invalid flag representative of whether the slot is valid or invalid;

a step of setting the valid/invalid flag of a predetermined one of the slots which is in a state set to valid with the valid/invalid flag to invalid to set the slot as a free slot while settings of the higher hierarchy, lower hierarchy and same hierarchy reference information of the slot are maintained.

19. A recording medium on which a program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files is recorded, the processing procedure comprising:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a



valid/invalid flag representative of whether the slot is valid or invalid;

setting the higher hierarchy, lower hierarchy and same hierarchy reference information so as to be inconsistent with regard to a predetermined one of the slots;

setting the valid/invalid flag of the predetermined slot to valid and allocating the extract information to the predetermined slot; and

registering the extract information into the index file.

20. A recording medium on which a program for a file management method for causing a computer to execute a predetermined processing procedure to record desired files on a recording medium and update an index file recorded on the recording medium in response to recording of any of the files is recorded, the processing procedure comprising:

the index file being formed from a train of slots of extract information of the files and a folder or folders;

each of the slots having set therein higher hierarchy reference information pointing to another slot of a higher hierarchy, lower hierarchy reference

information pointing to a further slot of a lower hierarchy, same hierarchy reference information pointing to a still further slot of the same hierarchy and a valid/invalid flag representative of whether the slot is valid or invalid;

the higher hierarchical reference information being a parent entry number pointing to the slot corresponding to the closest folder to which a corresponding file or folder belongs;

the lower hierarchy reference information being a child entry number which points, where the slot retains the extract information corresponding to a folder, to the slot corresponding to the closest folder or file which belongs to the folder, but indicates, where the slot retains the extract information corresponding to a file, a predetermined value;

the reference information pointing to a relationship of each slot to the other slots of the same hierarchy being a sibling entry number successively and circulatively pointing to another one of those slots which correspond to files and folders of the same hierarchy which belong to the corresponding folder or the folder same as that of the file;

setting the valid/invalid flag of any of the slots

to invalid to set the slot as a free slot; and

setting the reference information of the free slot and the remaining free slots such that each of the sibling entry numbers of the free slot and the remaining free slots may successively and circulatively point to another one of the free slot and the remaining free slots.